GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, JULY 3, 1889.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—Mountain Reservoirs and Irrigation.—The Will of the Late Professor Reichenbach 313
A Mountain Meadow (with illustration) 314
Testing and Introducing New Fruits ..... *C. L. Watrous.* 314
FOREIGN CORRESPONDENCE:—London Letter ..... *W. Goldring.* 315
NEW OR LITTLE KNOWN PLANTS:—Spiræa Van Houttei (with illustration) 316
CULTURAL DEPARTMENT:—Cultivation of the Pecan ..... *Geo. E. Walsh.* 316
Celery Growing ..... *W. F. Massey.* 316
Seedling Palms ..... *W. H. Taplin.* 317
Orchid Notes ..... *A. Dimmock.* 318
Raspberries ..... *B. R.* 318
Manure.—Weeds ..... *Professor L. H. Bailey.* 318
Spiræas ..... *O.* 318
Notes from the Arnold Arboretum ..... *J.* 319
THE FOREST:—Forest Interests in Pennsylvania. III ..... *J. B. Harrison.* 320
RECENT PUBLICATIONS 321
PERIODICAL LITERATURE 322
CORRESPONDENCE:—Unappreciated Trees ..... *Alfred H. Peters.* 322
Insensibility to Odors ..... *T. B. F.* 323
Temperature and Germination ..... *E. Lewis Sturtevant, M.D.* 323
Another New Palm ..... *E. N. Reasoner.* 323
RECENT PLANT PORTRAITS 323
NOTES 324
ILLUSTRATIONS:—Spiræa Van Houttei, Fig. 117 317
A Meadow on Mount Rainier 319

Mountain Reservoirs and Irrigation.

THERE are few subjects connected with the development of American civilization of more fascinating interest than that of irrigation. During all our early history it was "Something to read about," a feature of the life of far lands, oriental and romantic in all its suggestions and associations. There is, of course, plenty of hard and prosaic work in agriculture by irrigation, but there is also much that appeals strongly to the poetic and artistic imagination. The construction of canals and ditches, dams and reservoirs requires downright, immitigable toil. Not many kinds of labor are more severe or exhausting. But there are few spectacles ever beheld by man which are more impressive, or better fitted to awaken "vital feelings of delight," than the transformation, by means of irrigation, of an arid and barren waste into a fruitful and populous land. As the life-giving water invades, conquers and possesses the country its progress is like the march of a triumphant and liberating army, but there is no death or suffering or destruction in the gentle and pervading flow. It brings verdure, beauty and fruitfulness everywhere, and makes the desert to rejoice and blossom as the rose. Not many things of which men are capable come nearer the exercise of original creative power than the magical awakening of fertility where all had been inert and lifeless before, by the introduction of water into regions which had before been destitute of it.

We have great areas of arid land in the south-western part of this continent which can be made extremely productive, and capable of sustaining a dense population, by means of irrigation. The soil has all the elements of great fertility except water, and this can be artificially introduced and applied in great abundance. The rivers which have their sources in the mountain forests, which now belong to the nation, will supply water for the irrigation of vast tracts of arid land, if the water is properly husbanded, and its flow regulated by maintaining the mountain forests which now constitute the natural reservoirs for the storage of the water which sustains these rivers with equable flow through the whole year. If the forests are removed in such a way that they are not reproduced, that is, if forest-conditions on these mountains are permanently destroyed, the great sponge which now covers them everywhere, composed of root-fibres, leaf-mould and decaying vegetable matter, will be destroyed and washed away. Then the water of the winter rains and snows will rush unobstructed down the smooth slopes, and so much of it will reach the channels of the streams in a short time that enormous floods will be immediately produced. The valleys will be ruinously inundated, and the fertile lands along the streams will be buried under the débris brought down from the hills. The experiment has been tried again and again in many parts of the world, and always with the same consequences. The extinction of the mountain forests results in the destruction of the mountains themselves, and in that of the streams which have their sources in them.

All this is well known to those who have studied these subjects, and the facts are easily accessible to any who wish to look for them. But as the work of arousing, enlightening and directing public sentiment so as to provide for the preservation of the mountain forests on our public lands is one of difficulty, some people propose that we shall avoid all this labor by surrendering the forests to extinction, and adopting the comforting notion, that as it is so hard to save them they are not really necessary. It is also to be observed that the splendor of the achievements of inventive and mechanical genius during our own time, seems to justify the most daring and audacious expectations for the future, and it is not wonderful that men should imagine that nature imposes no limitations which may not be removed or overcome. Some influential engineers in this country think so highly of their profession and its work that they even propose to disregard and reject the natural provision for guarding the sources and flow of rivers, and to substitute for the mountain forests, which are the natural storage reservoirs, a system of artificial storage reservoirs constructed with walls, dams, and embankments.

If this method is ever tried it will result in frequent and ruinous catastrophes. The recent awful tragedy at Johnstown, exhibits the inevitable consequence of all attempts to restrain and control a body and volume of water too great for the capabilities of an artificial structure. If the attempt is made to substitute the use of artificial storage reservoirs for the natural function of the mountain forests of California, and other similar regions, it will be found that either the dams and embankments must be constructed with sluice-ways so large as to permit the free passage and escape of the excessive volume of water in the time of great floods, in which case, the reservoirs would be nearly useless, and it would not be worth while to construct them, or, if the plan which is now talked about is carried out, in the construction of reservoirs large enough, really to store and preserve the water of the spring floods, for gradual distribution and use in time of drought, the breaking of such embankements is inevitable, and the valley below each reservoir will be fated to sudden desolation, with awful destruction of human life if there are people living in it. Why should we pay so dearly for the knowledge which we shall thus acquire? Why not accept now the lessons which time is sure to teach us? The advocates of the destruction of the mountain forests, and of the substitution of artificial storage-reservoirs, admit that such catastrophes will result, as fatalities now attend the running of railway trains. In the question of the preservation or destruction of the mountain forests on the lands belonging to the nation are involved the conditions of the life and welfare of millions of human beings.

Artificial storage-reservoirs will of course be necessary in some regions, as part of the provision for adequate and economical irrigation, and if they are properly designed and constructed they can be made successful while forest-conditions are maintained on the mountains and around the sources of the streams. But if the forests are destroyed no artificial structure will restrain the resulting floods.

THE will of the late Professor Reichenbach is a remarkable one, and his object in imposing the conditions which evidently appeared necessary to him in disposing of his invaluable collections are not very apparent, although a mistrust of the men into whose hands his cherished specimens would have fallen had they been made available for immediate use, was probably at the bottom of his determination to keep them sealed up for a quarter of a century. The following translation of a portion of the will, which we borrow from the *Gardeners' Chronicle*, tells the story of the Professor's desires, whatever may be the ultimate disposal of the collection :

"My herbarium and my botanical library, my instruments, collection of seeds, etc., accrue to the Imperial Hof Museum in Vienna, under the condition that the preserved Orchids and drawings of Orchids shall not be exhibited before twenty-five years from the date of my death have elapsed. Until this time my collections shall be preserved in sealed cases. In the event of the Vienna Institute declining to observe these conditions, the collection falls under the same conditions to the Botanical Garden at Upsala. Should the last-mentioned Institute decline the legacy, then to the Grayean Herbarium in Harvard University, Cambridge, Massachusetts. If declined by that Institute, then to the Jardin des Plantes at Paris, but always under the same conditions, namely, of being sealed up for twenty-five years, in order that the inevitable destruction of the costly collection, resulting from the present craze for Orchids, may be avoided."

It is certainly to be regretted that Cambridge was not selected as the first recipient. In no other country are the facilities for studying Orchids now so limited as they are in America, and there is no other—if it is fair to judge by the progress which has lately been made in the collection and cultivation of these plants here—in which a knowledge of Orchids will be so necessary or where the students of these plants could make a better use of the mass of material which Professor Reichenbach has left.

Since the above was written we learn that the authorities of the Imperial Hof Museum have accepted the bequest of Professor Reichenbach's botanical treasures, subject to the conditions imposed in the will, so that there remains no longer even the remote chance that they will find their way to this country.

A Mountain Meadow.

MOUNT Rainier, which rises to a height of 14,444 feet from the shores of Puget Sound, is the most beautiful of the mountains of the United States, as it is the most difficult to ascend, only two or three parties, previous to last summer, having succeeded in reaching the twin craters which occupy the summit. In August last, however, a party of nine men, including Mr. John Muir, the well-known student of the Cordilleran glaciers, gained the summit, and were fortunate in obtaining a large number of photographs of the mountain, and of various aspects of vegetation encountered during the journey. Among these photographs is the one that is reproduced upon page 319 of this issue. It represents an alpine meadow covered with flowers of *Erigeron salsuginosus*. We are indebted to Mr. Charles V. Piper, of Seattle, one of the party who made this memorable ascent, for the photograph, and for the following brief note, which he has promised to supplement later with a fuller and more detailed account of the flora of Mount Rainier.

"This particular meadow on which we encamped lies between glaciers of the Nisqually and Cowlitz rivers, on the south side of the mountain. It covers, probably, four square miles, and ranges in altitude from 5,000 to 7,000 feet. The meadow on the east side of the mountain, between the Cowlitz and Natchess glaciers, is about the same size and differs but little in vegetation. The other meadows on the main mountain are much smaller and, with one exception, difficult of access. The meadows on the summits of the surrounding lower mountains are quite extensive, however. The timber on the meadows is confined mainly to the crests of the ridges running up the mountain, and consists of *Abies subalpina*, *Tsuga Pattoniana*, *Chamæcyparis Nutkaensis*, and a few *Pinus monticola*. *Erigeron salsuginosus* grows on the drier ground near the timber, together with the following equally abundant plants: *Orthocarpus pilosus*, *Lupinus*, sp., *Anemone occidentalis*, *Potentilla gelida*, *Valeriana*, sp., *Polygonum Bistorta* and *Veratrum viride*."

Erigeron salsuginosus is widely distributed from Kotzebue Sound and Unalaska, and along the high mountains as far south as California, Utah and New Mexico. It was first discovered by Dr. Richardson, of the Franklin Search Expedition, on the salt plains of the Athabasca. It is a handsome plant, with stout stems twelve to twenty inches high, and solitary or a few corymbosely-disposed flowers, with broad disks, and fifty to seventy purple or violet rays half an inch or more long. There is an early figure under *Aster salsuginosus* in the *Botanical Magazine*, t. 2,942.

Testing and Introducing New Fruits.

THE following is the substance of a paper prepared by Mr. C. L. Watrous, of Iowa, for the meeting of the American Pomological Society at Ocala, Florida.

This subject has claimed much interest of late and is yearly assuming greater importance. The wonderful development of the means of communication and of transportation has brought the most distant lands nearer to us, practically, than were adjoining states a half century ago, while the growing cheapness of printers' ink has made it easier to spread the fame of a new fruit thousands of miles across land and sea than it was only a few years ago to properly advertise one in the next county.

Again, vast regions of our country with conditions like none hitherto known, have been settled by an eager, prosperous, enterprising race, determined to have the best and willing to pay for it. Furthermore, the universal custom of propagating all fruits by budding, grafting, layering, and the like—that is, by extending the life of the individual, to the exclusion of the method of sexual reproduction by the creative effort of two life germs from different individuals—has practically deprived us of all benefits from the use of the natural method of adapting fruits to new or changing conditions by seedling production, selection and the survival of the fittest.

No distance across sea or land has been too great for transportation. Neither has it been conceded that any change of latitude or of longitude present reasonable grounds for distrust of new comers.

A single glance at some laws of climatology involved in such work is all that time permits, but this glance will open vistas into the domain of Nature that no pomologist's life will be long enough to explore. It will be evident, at first thought, that all maritime regions must have many similar conditions, from the presence of the ever-changing, but also the ever-steadfast, sea. A certain degree of moisture and of warmth must always pervade the atmosphere near unfrozen water. It further appears that the western shores of all continents have softer climates than any other regions and are similar to each other; also, that the eastern continental shores bear a like climatic resemblance to each other, although less mild than either western shore; and, finally, that the eastern and western coasts of the same continent are extremely dissimilar.

The interiors of continents, besides differing greatly from any maritime regions, also differ profoundly from each other, each subject to comparatively sudden and violent changes, and each, of course, subject to laws and conditions peculiar to itself. The eastern continent is, in its northern part, a vast plain, open to all ocean influence from the west, extending, without any considerable barrier, from the most westerly cape of France to the most easterly sand-spit of China, more than 6,000 miles. On the western Continent, on the contrary, all long vistas are in northerly to southerly directions. There are narrow maritime belts on the east and on the west, soon interrupted by the Appalachian range near the eastern coast, and by many ranges on the west, including the Coast range, the Cascades, the Sierras and the lofty Rockies.

The broad interior region of this continent, known as the Mississippi region, swept by fierce winds north and south and subject to extreme electrical disturbances, is quite unlike either coast region, and also quite unlike any other known inland region of the earth. In this inland prairie region, not only do fruits and plants, natives of California or of Europe, generally fail, but also those from our Atlantic States as well. It was supposed that fruits from Russia formed an exception to the rule, but, with more extended experience, failures have multiplied and doubts gained force. At present there is not a

single variety of any fruit, great or small, of known Russian origin that has given good promise of permanent usefulness in any western state. Trials are still carried on, but with greatly moderated hopes.

It has been shown by Dr. Gray and others that the principal forms of plants of the northern hemisphere once flourished together in the region about the north pole, that thence they were driven southwards along the lines of least resistance by glacial cold; returning northwards with returning warmth and repeating these migrations till we now find regions of vegetation almost as distinctly marked as geographical boundaries on the map. Seedlings of conifers growing on the eastern slopes of the Rocky Mountains will flourish in the interior or Mississippi region, while seeds of the same species from the western slopes of the same mountains fail to produce seedlings able to live there, yet plants from the western seeds give full satisfaction in Europe, and to some degree, though a lesser one, in our Atlantic region.

A late horticultural report in Iowa showed in a certain county a Pear-orchard of 350 trees of over fifty varieties, not a tree of which had been destroyed by the late extreme seasons there, while in the second county, distant not more than fifty miles, Pears were not mentioned, and scarcely any varieties of Apples had escaped. The late geological survey of Indiana develops in that state at least seven distinct botanical regions marked by specific differences in the characteristic native plants.

In the cold and marshy north are found the plants that characterize the vegetation all the way up to Hudson's Bay, while in the south-west are those that dot the slopes and bottoms down to the Gulf. Nay more, sometimes on opposite sides of the same ravine, in a certain hilly region, may be found the uttermost outlying pickets of the opposing floral hosts.

The same laws hold in every region. In the new Stanford Arboretum, near San Francisco, subject to the unchanging Pacific, the trees of South America and of Siberia; of our Atlantic States and of Japan; of western Europe and of China, vie with each other in luxuriant growth along with those of Alaska, of Dakota and of Mexico—so writes Mr. Douglas, the Director.

The contrary exists in the upper Mississippi region, where trees of the native forests are sometimes injured by extreme seasons, and all strangers may well beware. Thus it appears that one must study his own condition to judge the limit of his reasonable faith in new fruits.

Experience has lately shown that trees from an extremely severe climate or from the far north are not, therefore, to be presumed well adapted and hardy in a climate much warmer. Partial unlikeness of environment—that is, unlikeness of some of the surrounding conditions, though neither great nor obvious, may quite easily be sufficient for utter disappointment. The wound of poor Mercutio was "not so deep as a well nor so wide as a church-door," but it was enough. Very short distances and slight changes in elevation are often sufficient to cause failure in new fruits. Moreover, it is found by trial that fruits and plants transported so far from their native habitats may thrive very well while young, but fail miserably in middle age or after producing fruit. Therefore it is found that no one can safely commend a new fruit for general cultivation in any region until it has been well tested there under all usual conditions, nor until thorough trial for a period at least equal to the usual life of an individual of that species.

Both these safe and conservative rules are persistently violated by introducers of foreign fruits—where such violations are most dangerous of all—as well as by those lightning operators who propagate, advertise and introduce their prodigies all in one and the same season, leaving the testing and the groaning to be done at leisure by the purchaser and planter.

There seems abundant reason to believe that every botanical region must be willing to undertake the task of originating, from seed and by selection, the bulk of its fruits, if success be expected. This is because health, vigor and adaptability of tree or plant can seldom be perfectly secured except by nature's process of creation and survival. It follows also that the purchaser of new fruits should inquire carefully as to the conditions of soil and climate characterizing the birth-place of the tree or plant offered for his money, because, if at its very best under one set of conditions it cannot possibly be also at its best under very different ones.

It is not sufficiently appreciated that plants are indicators of such extreme delicacy of climatic and soil differences that the finest instruments of men are clumsy beside them.

Is it too much to say in the light of experience that no region can reasonably hope for as good results from the plants of any other region on earth as from selected individuals from abundant seedlings produced in that very region and subject to all its peculiarities. It seems to me that the proposition needs no argument, but that an attitude of distrust and caution towards all fruits of distant origin is the duty of every planter.

Upon every fruit-grower is equally laid another duty; that of annually planting some seeds from his best fruits, that the course of nature be kept clear for the perpetuation of a race of successful fruits, for the changed times and changing conditions in which his posterity must exist.

Foreign Correspondence.

London Letter.

I DO not remember to have seen the London parks and gardens with such a poor show of flowering shrubs as they have this season, and the same complaint comes from all parts of the country. This result is attributed to the last wretched summer, when the tree and shrub-growth was too luxuriant to form flower-buds. Notwithstanding the dearth of shrub-bloom, the public parks here are just now delightful; the glass-houses have given out their millions of bedding-plants to adorn the lawns. Ever since March the public gardens have glowed with their parterres of gorgeous bulbs, and the late Tulips are only just past. I agree with your remarks in a recent page of GARDEN AND FOREST, that Tulip-planting is an expensive luxury, considering how short their flower season is. But we are trying to reduce the expense here, for not a few bulb-growers are of the opinion that as fine bulbs can be grown in England as in Holland, and if in gardens where bulbs are planted extensively they can be grown to perfection, they must be cheaper than imported bulbs.

The Royal Horticultural Society has lately had a busy time, and it really seems that the old Society is becoming re-invigorated. No stranger who saw the magnificent exhibition the Society held a few days ago in the Temple Gardens (which is almost in the heart of the city of London) would have supposed that this show was organized by a Society which a few months ago was considered in a hopeless condition. Nowhere in the world could such a display be seen, especially of Orchids, which were contributed from the richest collections. Among amateurs I need only mention the names of Baron Schroeder and Sir Trevor Lawrence, while the trade was worthily represented by Messrs. Sander, Low and others. Such Orchids as *Odontoglossum Alexandræ* were displayed by the thousand in one mass of graceful bloom. Then there were hosts of Cattleyas, Lælias, Cypripediums and all the popular genera of Orchids, besides numerous varieties that could only come from the Schroeder and Lawrence collections. In the presence of these banks of Orchids, glowing with splendid colors and most graceful in form, one is hardly surprised that the world of flower-lovers worship Orchids, at any rate, for the moment. But this comprehensive exhibition represented other classes of plants grown to perfection. There were pot Roses six or eight feet across from the Cheshunt Nurseries, similar to those that grand old florist of the past, Charles Turner, showed year after year at Regent's Park.

These fine examples of cultural skill did not excite the admiration of the crowd so much as the group of huge pot-specimen Clematises shown by the Worcester nurseries. These plants were balloon-trained, ranging about six feet high and some three or four feet through, and were masses of flowers, some of which were quite a foot across. These varieties were all of the Lanuginosa or early-flowering section, and comprised in their colors all shades of purple and mauve, besides snow-white. I need not give the names, as they are the standard sorts to be found in good Clematis lists. Since Jackmann, of Woking, ceased showing Clematis nothing has been seen in London to compare with these. There are no better climbers for the green-house at this season than these large-flowered Clematis, and they continue to bloom until the smaller-flowered *C. Jackmanni*, in its endless varieties, come in flower next month. For the lovers of hardy plants there was abundant entertainment in this show, for Ware, of Tottenham; Paret, of Cheshunt, and others put out their full strength, and showed us what a show border-plants can make when potted and grown specially for exhibition. Pæonies of the Albiflora, and other herbaceous species; Poppies, Pyrethrums, Pansies and a whole host of other things which at this season make open-air gardens so gay, made the flowerless lawns at the Temple gay in a few hours. Pot-culture of hardy plants has not been much practiced, but there is a great deal in it, and it is only from experience that we can tell which are most suitable for the purpose.

Hardy shrubs were represented by Mr. Anthony Waterer,

who contributed from his Knap Hill nurseries a bright group of new hardy Azaleas, all highly-bred seedlings, which are very different from the old sorts of Ghent Azaleas. But I must give you a special note about this most important race of new Azaleas. Messrs. Veitch showed a good many interesting things in the way of shrubs in bloom, but there was nothing that calls for notice here except the Japanese Maples, which are fast becoming so popular for green-house adornment. They are hardy in a good many places in England, but they must, on the whole, be termed half-hardy shrubs. The most attractive green-house flowers here were the Begonias, single and double, from Messrs. Laing and Messrs. Cannell, two firms who have done most to improve and popularize Begonias. Some say that they are getting the blooms too big. This may be so from an artistic standpoint, but ask the amateur, who is forever striving to produce the biggest Begonia-bloom as he is the biggest Gooseberry. Messrs. Cannell claim to have beaten the record with their flowers six inches across, looking more like double Hollyhocks than Begonias. The market-men, too, were in evidence at this grand show, and none more worthily represented this section of gardeners than Mr. May, who is chiefly a Fern-grower, and has raised so many of the beautiful new varieties. He carpeted a large area of the turf with his Ferny growth, which in every instance was the perfection of cultural skill. *W. Goldring.*

New or Little Known Plants.

Spiræa Van Houttei.

THIS is by far the handsomest of all those Spiræas which produce their flowers from the extremities of short leafy branches of the year, and one of the very handsomest and most desirable of all hardy flowering garden-shrubs. According to a writer in the *Revue Horticole* (1866, p. 269), it was raised by a French nurseryman, Monsieur Billiard, of Fontenay-aux-Roses, from seed of *Spiræa aquilegifolia*, a form of *S. trilobata* with which we are unacquainted. Its relationship with the Siberian *S. trilobata* is evident; it is, however, a much more free-growing plant, attaining in good soil a height of six or eight feet, and forming, with its spreading and gracefully arching branches, a wide bush as much through. The foliage is somewhat paler, especially on the upper surface, than that of *S. trilobata*, the flower heads are broader and much flatter, while the individual flowers differ from those of the Siberian plant in their larger size and in their color, which is pure, clear white, while those of the parent plant are greenish white.

Cultural Department.

Cultivation of the Pecan.

THE Pecan is cultivated quite extensively now in the southern States, and it may be found growing on river-banks from Indiana to Texas. Although the tree is well known for its delicious nuts, which constitute an article of considerable commerce, it has not been cultivated systematically for profit until recently, except in a few localities in Texas and Mexico.

The tree is a species of Hickory (*Carya*), and grows tall and slender, with a very hard wood. In early days it was held in high estimation in the south on account of its beauty, and many an old plantation is now marked out by a fine growth of these trees. When the trees are confined in the forests they shoot up fifty or sixty feet without branches, but when standing alone they attain a height of from sixty to ninety feet, with straight, symmetrical trunks, and expand into well balanced, ample heads of bold, handsome, pinnated foliage.

The Pecan-nuts which come from the southern States are from an inch to an inch and a half long, smooth, cylindrical, pointed at the heads, and thin-shelled, with the kernels full of delicately-flavored meat. The demand for them in this country and in Europe far exceeds the supply, and owners of land in the south bordering on river-bottoms would do well to plant it with the thin-shelled variety of Pecan. This is being done now more or less in many of the states, and plantations or groves of Pecans are annually set out. It is an important question, not yet satisfactorily decided, whether they will not pay much better than either Oranges or Lemons. In Florida there are many acres of low, rich hummock-land, aptly called here "flat-woods," which cannot be put to any profitable use until it has been thoroughly drained. Such drainage, owing to the nature of the soil, is an expensive undertaking, and it is doubtful if, in the end, the land would prove thoroughly dry during rainy seasons. But these "flat-woods" would make fine places for Pecan-groves. The trees do not seem to mind an overflow of water around their stems, for many of the best groves found in Texas and Mexico are situated on rich bottom-land that is often inundated once or twice a year. The low "flat-woods" can be obtained for a trifle, and the cost of a Pecan-grove is thus materially lessened. In the case of Oranges and Lemons the land to be selected must be of the best, and the prices are usually correspondingly high. Land along the river-bottoms and bayous all over the southern States is comparatively cheap, owing to destructive overflows of water, which may rise any season and flood the fields. Rice and Sugar-cane are about the only crops that can be made to thrive here, and it is not always desirable to grow either one of them along river-banks or in flat-woods.

The prospect, therefore, is that much of this waste land must be taken up by Pecan-groves, which will well repay the planter eight or ten years after the trees are put out. Several of the young groves that were planted two or three years ago in low flat-wood, as an experiment, are now doing finely, and from present indications they will repay the owners.

The period of waiting for a Pecan-grove to bear fruit is long, and often this proves a serious drawback to the cultivation of the trees. The time after planting for the trees to begin to bear so that they will pay expenses has been placed variously from ten to twelve years. The first few years the trees grow slowly, but as they increase in size and age their growth becomes rapid. Their bearing also increases, and the crop nearly doubles itself every year or two.

It is not desirable to raise the tree from seed, as it is not likely to be as good as the seed. Young nursery-trees are the best, or if one has time he can raise his own trees from the seed, and then bud them with the large, paper-shell variety. This is the most successful way here of propagating the Pecan. After the trees are once started they need little or no care. An occasional plowing between the rows and general stirring of the soil would tend to improve their growth; but such labor is really unnecessary. The trees, however, do not stand transplanting very well. They should be put in the place at first where they are intended to grow. If the land is not too low and wet, vegetables can be grown successfully between the rows of trees. Some persons plant the trees thirty or forty feet apart, but fifty or seventy feet is better. When the trees once begin to bear the only expense attached to the grove is the cost of picking, packing and shipping the nuts.

Fort Meade, Fla. *Geo. E. Walsh.*

Celery Growing.

THERE is little doubt but that the method of growing Celery, which is practiced from Baltimore southward, could be profitably extended further north, particularly in private gardens and where space is valuable. I refer to the plan of growing it in beds five feet wide and of any desired length. Celery kept where it is grown is certainly superior to that which has been lifted, and when grown in beds it can be covered and kept through winter, which is impracticable in single rows.

In planting these beds we use a board six feet long and one foot wide. A garden-line is tightly stretched along one side of the bed, and the square end of the board is kept parallel to this line, so that the rows run straight across the bed one foot apart. Notches are cut on the edges of the board six inches apart, beginning six inches from the end, making eleven notches. In using the board it is laid perpendicular to the line, as before described, and the planter, standing on it, sets a plant at each notch on both sides of the board, and so continues the whole length of the bed. All that is now necessary is to keep the bed well cultivated until it is necessary to add some earth to keep the leaves erect. The earthing is done with a pair of boards ten inches wide and about seven feet long, a foot or more at each end being tapered to form a handle. In using these boards they are set on edge between two rows of plants, and kept nearly upright by pegs stuck in the ground on the outside at each end. Two men work together standing one on either side of the bed, and shovel the soil from the space left on the sides of the bed, placing it between the boards until level full. Then grasping the handles at the ends of the board they bring their upper edges together with a few sharp raps, then each man throws up the end of the board in his left hand and catches the one in his right, inserting it in the next row of plants.

The soil is thus left standing in a sharp ridge between each row of plants. After setting up these ridges between each row the boards are laid aside and the men "handle" the celery. Beginning at the middle of the bed each man grasps a plant with his left hand, holding the foliage erect, while with his right he pulls down the ridge of earth and packs it tightly around it. After the whole bed has been "handled" in this manner the boards are again used and fresh ridges are set up between the rows, so that the plants stand in little trenches and are drawn up more erect. As the plants get above the ridges and are inclined to spread the earth is again pulled down around them and another set of ridges set up. As the season gets cooler the earthing is continued as fast as the tops of the plants get above the ridges, care being taken at the same time to carry up a bank of earth a foot thick on each side of the bed. When hard freezing is evidently at hand, say late in November northward, and in mid December in Virginia, the entire bed is covered with a thick layer of earth rounded up so as to shed the rain. Forest leaves are then banked thickly over all, and corn-stalks or bean-poles laid on to keep them from blowing off. At the north a temporary board roof over the bed, packed underneath with leaves or straw, I should suppose would exclude frost. Having the bed covered in any convenient way, it is easy to get at it in winter, and the labor is much lighter than earthing up single rows and then lifting and storing the plants.

Celery should be set in the beds early in July for late fall use, and from the middle of July to the middle of August for winter and spring use. That which is intended to keep during winter should not have any earthing beyond the first handling until the last of October. White Plume Celery is especially adapted to bed-culture, but the Sandringham and Golden Heart are our favorites.

Crozet, Va. *W. F. Massey.*

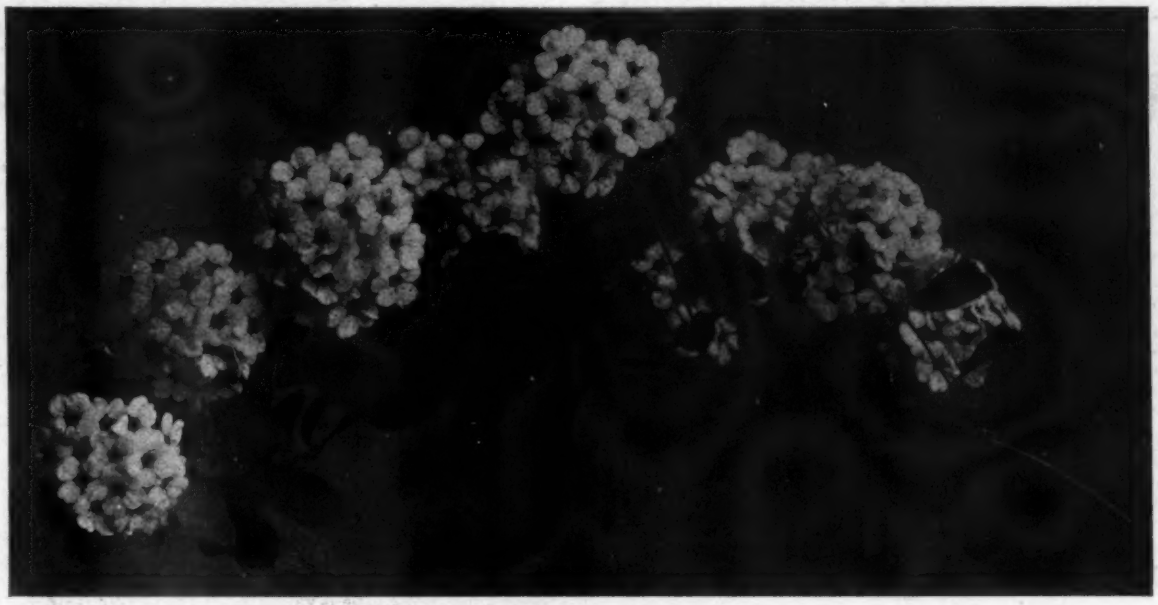


Fig. 117.—Spiræa Van Houttei.—See page 316.

Seedling Palms.

THE greatly increased use of Palms for house decoration and also for filling conservatories, is being met by a corresponding increase in the number of seedling Palms raised from year to year in the establishments of many of the leading florists. That this branch of the business may be overdone in the near future is an opinion freely expressed by some florists, but as the public knowledge of the great utility of these plants becomes more general, it may reasonably be expected that the demand for well-grown plants will quite equal the supply for some years to come.

It is not, however, to the commercial side of Palm-growing that I propose to call attention, but rather to give some general remarks in regard to their culture.

The first requisite to success in the raising of seedling Palms is good, fresh seed, and this, in the case of some species, is difficult to procure, on account of the long ocean voyage, during which the seeds invariably lose much of their vitality unless very carefully packed. It will be found that some species suffer much more than others from this cause. *Kentia Balmoreana*, for example, apparently, decays much more rapidly, than *Kentia Forsteriana* when packed in precisely the same manner and sent at the same time.

The seed of that most useful Palm, *Areca lutescens*, though easy to germinate, does not keep well, and, consequently, it should be sown as soon as possible after its arrival, and if it is fresh it will germinate in three or four weeks, and may be potted off at the end of three months.

Among the Palms in general use probably the easiest and quickest to germinate is *Livistonia Chinensis* (or, as more generally known, *Latania Borbonica*). Seeds of this species, under favorable conditions, germinate in about two weeks after planting, and are ready to pot off in two months' time.

Cocos Weddelliana is one of the easiest of its family to raise from seed, though not always making so good progress after the first potting, owing to the fact that the long, stiff tap-root, which is made during the first growth of the seedling, is very brittle, and is, in consequence, frequently broken or otherwise injured in potting. This gives the young plant a severe check; and, if accompanied with a slight excess of water, such an injury often causes the death of the seedling.

The Kentias are rather slower in germinating, and sometimes take from six to eight months for the operation, and besides this it is seldom that more than fifty per cent. of the seeds prove good. This fact, coupled with that of the comparatively slow growth of the young plants, undoubtedly has much to do with the high prices at which good plants of this species are sold.

The soil for Palm-seeds should be rather lighter in composition than that in which established plants are grown, and may consist of equal portions of peat and light loam, with sand enough to make the mixture open and easy to drain, the latter point being worthy of attention, for when the soil is allowed to become too wet many of the seeds are sure to rot.

The seeds may be planted in either pots, pans or wooden boxes, an objection to the latter being their liability to breed fungus, the earthenware vessels being therefore found the most satisfactory, and for convenience four to six inch pots are preferable. As a steady bottom-heat is essential for the rapid germination of Palm-seeds, the pots containing them should be placed in the propagating house or some similar structure, and plunged in cocoa-fibre or coal-ashes, the cocoa-fibre being the better conductor of heat of the two, and also cleaner to handle.

Care should be given to watering, to keep the soil damp without making it sodden, until the seedlings have developed

their first leaves, after which water may be given much more freely without injury to the plants. As to the time for potting off, it will be found best with most species to wait until the second leaf begins to push up, but with some of the free-growing sorts, such as *Areca lutescens* and *Livistonia Chinensis*, it is not necessary to prolong the time to this extent, and plants may be potted as soon as the first leaf is fully expanded; but they should in any case be kept in a warm house and shaded from the direct sunlight until they are well established.

Holmesburg, Pa. *W. H. Taplin.*

Orchid Notes.

Cattleya Mossiæ.—Ever since the flowers of this grand Cattleya first developed themselves under cultivation they have been the admiration of all beholders. Some fifty years have elapsed since its introduction, and where Orchids are grown it is invariably found occupying a prominent position among the other species. It is by no means a difficult plant to grow. The flowers are very showy and durable and most remarkable for their great variation in form and color. There are two beautiful white forms of this Orchid, but, like the majority of white-flowered Cattleyas, they are extremely rare. These are *C. Wagenerii* with large flowers, having a yellow blotch on the labellum, and *C. Reineckiana*, a variety with pure white sepals and petals and a broad, rich-purple labellum and yellow throat. The flowers of *C. Mossiæ* are borne on stout stems, four or five together on each, and they measure, individually, six or eight inches in diameter, with broad rosy sepals and petals, and a lip large and exquisitely fringed. They make their appearance during the months of May and June, and if removed to a cool temperature will remain four weeks in good condition on the plant. After the flowering period is past the plants that require it should be repotted before root-action begins. If this is not done at the proper season, the most careful cultivator may break or injure the roots in potting and thereby check the plant for a considerable time. The usual compost given to Cattleyas will suit this species, that is, good fibrous peat with a little sphagnum, and ample drainage, and during the period of growth an abundance of air and moisture.

Lælia majalis.—Mr. Charles Carpender, of New Brunswick, New Jersey, is the possessor of some remarkable specimens of this Orchid. On a recent visit to this collection I observed a plant carrying numbers of its enormous flowers, which in many instances measured seven inches in diameter, their broad lips beautifully penciled with fine purple, forming a pleasing contrast with the lilac color of the sepals and petals. This is one of the largest-flowered Orchids in cultivation. It is somewhat objected to on account of its shy-flowering habit. The plants here noted were attached to wooden blocks and suspended well to the light where a plentiful supply of air reaches them at all times. After the bulbs are fully grown a thorough rest is given to the plants by placing them in a cooler and drier atmosphere.

Summit, N. J. *A. Dimmock.*

Raspberries.—The variety of this fruit which is best for the market is seldom the one for the home-garden. A red raspberry, like the Brandywine, which is so dry and firm that it keeps its shape and bright color in transportation and produces large crops, will suit the market-grower, but in our home-garden we want better fruit—we want a raspberry of good size and full of juice, such a berry as the market-grower cannot handle. It is a great misfortune for private gardeners that nearly all the efforts at so-called improvements in the Raspberry have been in the direction of getting a large cropper and a good shipping fruit, so that quality and juiciness have been largely sacrificed. Among all the new Raspberries we have none to compare in quality for home use with Brinkle's Orange, Fastolf, Franconia, Hornet and others of the old tribe, which nurserymen have almost ceased to grow, because every one in planting follows the lead of the market-men.

For a combination of good qualities for home use the old Hornet is still unsurpassed, and with me has always been as hardy as any of the newer red varieties. Herstine is close to it and rather more productive. Brinkle's Orange is unsurpassed in flavor, but very tender. But in our gardens hardiness is a minor consideration. It is a small job to bend the canes down late in autumn and throw a few shovelfuls of earth on them after the old canes have been cut out. I plant them four by six feet and tie to a single wire stretched about four feet from the ground. If space is valuable, and this seems to be too much to occupy, it can be utilized by Cucumbers planted in the row between the Raspberry-plants about the time the fruit is ripe; and the winter-supply for pickles can thus be easily grown, for the shade of the canes will not interfere with the Cucumbers.

I have said nothing about the Black Cap Raspberries. Those who like fine fruit do not care for them, and, from sad experience, I know that, owing to their abundant seeds, Black Caps are dangerous if eaten too freely by children. *B. R.*

Albemarle Co., Va.

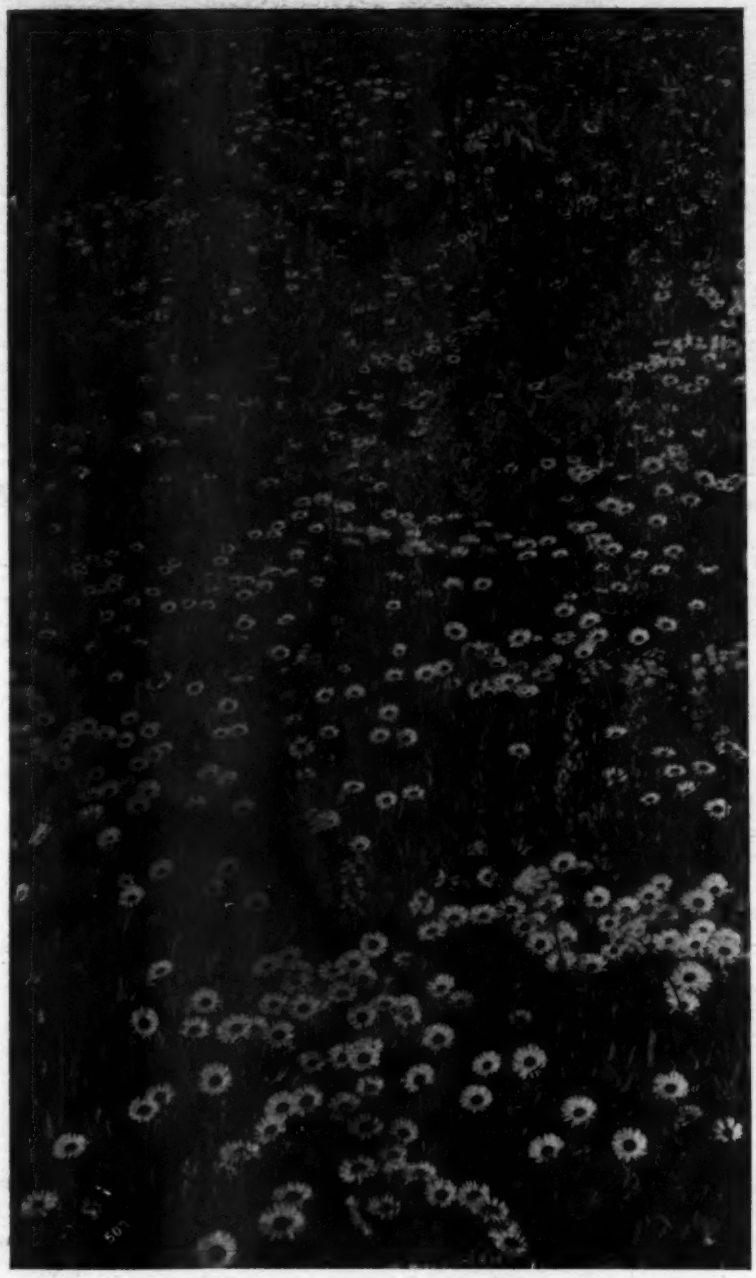
Manure is the leading topic of inquiry among all classes of farmers and gardeners. The values of certain substances, in fact of almost every substance, are still mooted points. We are only beginning to learn in this direction. But something is accomplished when we know what we are talking about. "Manure is plant-food" is a poor definition; "manure is a promoter of plant-growth" is better. One definition contemplates the use only of the elements of plant-growth, employing potash merely as so much potash, and nitrogen as so much nitrogen; the other admits of the mechanical improvement of soil and food for the plant at the same time. Our knowledge of the use and treatment of stable manure is yet imperfect. But we no longer hold to the notion that manure applied in the fall leaches away and is lost, or that its essential elements vaporize. On the contrary, we know that the best results come from application in the fall, and the more vegetable matter the soil contains the more complete will be the retention of the soluble ingredients. In barn-yards the soluble materials may pass into the underlying soils or be carried down gutters, but in compost piles which are four or five feet high, or even less, it is doubtful if the rain-fall of any season is sufficient to wash away the elements of fertility. But we do not recommend composting manure; there is no necessity for such an operation. But the refuse of the garden, the vines of Squashes, Potatoes, Tomatoes, the trimmings of Cabbage, Celery, and vegetable refuse, become valuable when composted. Of commercial substances, no doubt wood-ashes, finely-ground bone and nitrate of soda are the best for the gardener. But ashes are often of doubtful history, and should be purchased cautiously.

Weeds.—I never saw a good gardener who knew or cared much about weeds. In fact, ignorance of weeds is commonly a proof of good gardening. It matters not whether certain weeds are ten per cent. bad or ninety per cent. bad; they all succumb to good culture; all perish by the same process. When we all come to realize that we till for the good of the crop and not for the sole purpose of killing weeds, we shall have no occasion to study the tares, for they will never find the chance of growing. But some people cultivate only when the weeds force them to do so, and here the credit accrues to the weeds. Weeds are oftener a blessing than a curse. Even Virgil knew this. *L. H. Bailey.*

Cornell University.

Spiræas.—One of the finest herbaceous Spiræas is *S. Aruncus*, or Goat's Beard. It is indigenous to the Alleghany and Catskill Mountains, and is cultivated considerably in European gardens, where it is used in groups on lawns with fine effect. It is a plant of noble habit, and in rich soil, with plenty of water, its panicles of cream-white flowers develop into magnificent proportions. *S. astilboides* is a recent addition to the list of garden-plants, as it is also one of the best. It resembles *S. Aruncus* in many respects, but the latter, under liberal treatment, often grows five feet high, while *S. astilboides* does not exceed two feet. The flowers are similar in color, and have the same massive appearance, and for forcing it is far superior to *Astilbe Japonica*. *S. palmata* is perhaps the brightest-colored species of all. Its large corymbose panicles of brilliant crimson flowers make it one of the most striking and effective species in cultivation. We have never been so successful with this plant as during the past season, when it was planted in low, marshy soil with *Iris Kæmpferi*, where it thrives luxuriantly. *S. lobata*, or Queen of the Prairies, is a native species, and well worthy of cultivation There are, apparently, two forms of this plant—one having much darker-colored flowers than the other. The better of them rivals *S. palmata*, with its bright rose-colored flowers, and has also a delightful fragrance. *S. filipendula* is a distinct plant, with large loose cymes of white flowers on stems two feet high, with the leaves flat on the soil. There is also a double form of this species much dwarfer in habit and with very beautiful double flowers. We have also a tall-growing Spiræa from Japan, the name of which we have never been able to ascertain. It grows six feet high, with large whitish flowers, the whole plant resembling a gigantic *S. ulmaria*. This plant makes an excellent plant for the back row of the flower-border. All of the above are desirable garden-plants, and are at their best just now, adding considerably to the attractions of the garden. *O.*

Passaic, N. J.



A Meadow on Mount Rainier.—See page 314.

Notes from the Arnold Arboretum.

Lonicera Iberica, or the species which is known by that name in gardens, is the latest of the bush Honeysuckles in the collection to flower. It is a stout shrub, with upright branches covered with light gray bark, which separates readily into thin scales. The leaves are small, barely more than an inch long, short-petioled, ovate-cordate, or sub-rotund, contracted at the apex into a short point. They are dark, dull green, with a few scattered hairs on the upper, and pale on the lower, surface, which is densely covered, as are the shoots of the year, with a short pubescence. The flowers are bright yellow, an inch long, the corolla covered on the exterior with scattered hairs. The fruit is scarlet and conspicuous. This is a perfectly hardy plant, which, owing to the lateness of its time of blooming principally, has considerable value for the decoration of the garden. It is a native of the Trans-Caucasian country.

A number of the so-called Chinese Honeysuckles are now in flower. They all belong to one species, however, and are all—that is, all the plants found in our gardens—Japanese, and not Chinese. These plants have long been cultivated and are familiar in some form or other to all persons who have ever had anything to do with a garden. The true name of this plant is *Lonicera Japonica*, and it was discovered a century ago by Thunberg at the time of his journey in Japan. The most familiar form of this plant, or rather the form which was until the last few years most frequently met with in gardens, is a slender climbing plant, with pubescent, reddish stems, dark green leaves, with rather conspicuous red veins, and long tubular, slender corollas, pale red on the outside, yellow on the interior, and always fading yellow. This is the *Lonicera flexicaulis* of many old gardens. There is an excellent colored figure of this form in the "Dendrologia Britanica," *t.* 117, under the name of *Lonicera Chinensis*. Another form of this plant differs from the first in the color of the flowers only, which are white, fading to yellow, and in the absence of the red tinge on the stems and the veins of the leaves. This is sometimes known as *Lonicera brachypoda*. The showy yellow-leaved Honeysuckle which has appeared so generally of late years in gardens and which is known as *Lonicera brachypoda*, var. *reticulata* and as *L. brachypoda*, var. *foliis aureo-reticulatis*, is a variety, merely, of this same species. Another form which has been quite generally distributed of late in American gardens as *Lonicera Hallii*, so named because it was first sent to this country from Japan by Dr. Hall, is perhaps the most beautiful of them all. It flowers about ten days later than the other varieties; the leaves are broader, rather paler, and more densely covered with pubescence. It is a strong-growing plant, and will cover a large space in a single year with its flexible, twining stems. These various plants look quite different as they are seen growing side by side, but they all have characters which unite them. The flowers are in pairs at the end of a long (or sometimes quite short) common peduncle, upon which just below the flowers are two large leafy bracts, which are almost identical in shape with the true leaves, although they are much smaller, and generally not more than half an inch long. The corollas have slender hairs of the same character upon their exterior surface. The fruit is black and the same in all; the flowers all fade yellow, and all possess the same delicious fragrance, which is most powerful in the evening; and upon all these forms, although rather more commonly upon the golden-leaved variety, a few leaves grow near the base of the stem, with the margins deeply cut and lobed like those of a White Oak. *Lonicera Japonica* has escaped from gardens to the woods in some parts of the southern States, and has become well established, and practically naturalized. It is very largely planted in the middle States, where it is certainly one of the very best vines for covering buildings or rocky banks, or any rough waste spots over which it is desirable to spread a thick mantle of brilliant foliage and fragrant flowers. Here in New England this plant is not quite hardy, and is often killed back during severe winters, but as it flowers on the branches of the year, this killing back only serves to develop the growth of stronger shoots, and to retard, a little, the flowering time. Here the leaves fall in January generally, after having remained perfectly fresh and green during the autumn and early winter; further south the plant is evergreen, the old leaves remaining upon the branches until the appearance of the new crop in the spring. The branches keep on growing until stopped by frost, and, as flowers are produced upon these new growths, the plants are generally in

bloom all summer long. *Lonicera Japonica* is a widely-distributed plant in Japan, Formosa and in China, from Pekin to Shanghai, and far into the interior. Its tenderness in this climate seems to point to a somewhat southern origin for the plants now in cultivation; and it would be an interesting and probably a valuable experiment to test plants of this same species raised from seed gathered at Pekin or at some other northern station, where the climate resembles that of our extreme northern states.

Lonicera Etrusca is in flower. It is a very pretty, slender, graceful plant, with twining stems, ovate-obtuse leaves, which are pubescent on the under surface, the lower on short petioles, the upper pairs joined together. The flowers are delicately fragrant with long, slender corollas, purple without and yellow within. They are arranged in verticillate many-flowered heads, of which there are generally two or three at the end of each branch. It is a native of southern Europe, and although a very pretty plant, less desirable, perhaps, for general cultivation than the more robust and showier *L. Periclymenum*, the Woodbine of English gardens.

Viburnum molle is now in flower. It is a southern plant, only just reaching New England on the islands of Nantucket and Naushon. It is a stout shrub very like our common *V. dentatum* in habit and general appearance. The young shoots, petioles and cymes are, however, covered with stellular pubescence, and the leaves are rather more crenately-toothed and rather longer than those of *V. dentatum*. Like all our native Viburnums, with the exception of *V. lantanoides*, it takes kindly to cultivation, and like them all, it is a desirable garden-plant. It is only because these beautiful plants are "natives," a word which, when applied to a plant, has come to mean with some people common or homely, or because they are not known at all to persons who plant gardens, that they are not esteemed at their true value.

The Dwarf Huckleberry (*Gaylussacia dumosa*) is an ornamental plant, which, like many of its relatives, may wisely be transferred to the garden, where it should just now be covered with its pure waxy-white flowers. It is found growing naturally in low situations, generally in sandy soil, and never very far from the Atlantic sea-board. Generally a low plant, it may be seen sometimes four or five feet high. The leaves are green on both surfaces, thick and rather shining when fully grown, tipped with a point, and covered with the resinous dots peculiar to our deciduous-leaved Huckleberries. The nodding bell-shaped flowers are large — a third of an inch long — pure white and very abundant; and these are followed by large, showy black fruit, which has little but its beauty to recommend it, as the flavor is insipid and very inferior to that of the common Black Huckleberry (*G. resinosa*). The Dangleberry (*G. frondosa*) is a handsome garden-plant also. It is taller than the other Huckleberries, being found sometimes five or six feet high, with slender spreading branches. The berries, which are oblong and blunt at the apex, are pale and glaucous on the lower surface. The handsome white globular, bell-shaped flowers hang in loose slender racemes, on rather long drooping pedicels. The fruit is large and showy, dark blue, covered with a white bloom, and sweet and edible. This is the most ornamental of our Huckleberries as a garden-plant; and like the others not difficult to establish in the garden, if a little care is taken in lifting the plants in the woods.

Euonymus radicans, as the climbing Japanese evergreen Euonymus is generally called, is gradually, as its value becomes better known, working its way into popular favor. It is really a valuable plant in this climate, where the Ivy is not hardy, and where no other climbing plant with evergreen foliage can be grown in the open air. *Euonymus radicans* grows very slowly when it is first planted, but being once well-established it grows, never rampantly, but with some rapidity, and will climb, with the aid of its stem-roots, to a height of twenty or thirty feet. It will cling to masonry, but it seems to prefer to grow over the stumps or trunks of trees (as it does naturally in the forests of Japan), and an old stump covered with its dark green, lustrous foliage is certainly a beautiful object. The leaves are small, but as the plants grow older they increase in size, especially on the young shoots, and are then sometimes two inches or more long. There are varieties of this plant in cultivation with white-marked and yellow-marked and blotched leaves, but none of these are as handsome or as vigorous as the green-leaved form. *Euonymus radicans* is believed by botanists to be a form of the evergreen *E. Japonicus*, and it is said by M. Maximowicz, who has studied these plants, that he has never seen flowers of this variety. This year they have appeared in this neighborhood in several different gardens, and a figure of them has been prepared for Garden and Forest.

June 18th. *J.*

The Forest.

Forest Interests in Pennsylvania.—III.

At present very few, even of the friends of forestry or of the people in this country who are more or less active in efforts for forest-conservation, adequately understand the necessity of this preliminary work of the diffusion of knowledge and propagation of just ideas relating to forestry subjects. We need to work on long lines for objects which lie far ahead, but we have not the intellectual quality or temper which would enable us to do this. I am aware that it is a question among students of history and civilization, whether such an advance in national character and action as I have here referred to is ever consciously brought about, by men who plan and intend such a result, and organize and direct the action which is necessary to secure it. Some think that all advances in civilization come without having been thought about or intelligently aimed at by anybody, but I incline to the opposite opinion, to the view that most of man's steps forward have been taken because somebody foresaw the need for them, and felt an impulse to work to prepare for them and to urge others to do the same. I think that with ten years of work for that object, and the expenditure of one or two hundred thousand dollars, we might bring about such a condition and education of the public mind in this country as would render possible effective work for the perpetuation and successful management of our forests.

But we are probably not yet civilized enough for this in in our country. Even the best races of men usually learn very slowly the things which are necessary for national success and prosperity, and nations acquire wisdom by the severe discipline of suffering and loss. Very likely we may not learn in any other way the importance of our forest interests in our national housekeeping.

Yet there is more of encouragement to hope for the beginning of real growth here in Pennsylvania than anywhere else in our country. The public men of the state are becoming much interested in forestry subjects; the State Forestry Association is doing a useful work, and its organ, *Forest Leaves*, attracts the attention of many persons who had not before thought of this topic. But the most favorable condition which I have anywhere observed is the superior character of a large proportion of the people of the mountain regions of the state. In some districts most of them are of German origin, and one constantly hears the dialect known as "Pennsylvania Dutch." These people constitute one of the most valuable and promising elements of the state's population. I have been much impressed by the frequent evidences of poetic feeling and a real sense of natural beauty among them, such as I have not found among the natives of mountain regions in any other part of the country. They have the old-fashioned virtues of industry, veracity, hospitality and silent verity. I know of no other class of laboring people who work so many hours of the twenty-four as they. Many of their children and young people have fine natures, and they are certain to be numerously represented hereafter among the foremost men of the state and of the nation. They know a great deal about the woods, and think about them, too. A writer in Garden and Forest last year made a most sensible suggestion regarding these people which I am glad to quote in this report. "Some plan for taking care of these woods ought to form part of the education of the people of this part of the country. They are hard-working, sensible men and women, with a great deal of character; most of them poor. How can they be reached and taught what they need to know and think of and practice in regard to the forest interests of their region, and the best ways of managing their own woodlands?" Some kind of educational work regarding forests and tree-culture should be constantly maintained among them, and among all classes of the people of the state.

This state should have a Commissioner of Forests and Rivers, who should be not only a well-trained engineer, but a man of superior mind, with what military men call "an eye for country," who could hold the entire river-basin and watershed system of the state in his brain. He should have supervision of the location of buildings along the streams of the state, and of the construction of dams and reservoirs. The complex conditions of our modern life require more comprehensive co-operation and direction in matters pertaining to the general welfare of our densely-populated communities than we have hitherto practiced. The individualism which insists upon the right of every man to build his house where he chooses, and which permits corporations to construct dams and reservoirs without restriction or supervision, is barbaric,

and is not adapted to an advanced state of civilization. In connection with other lessons of the recent awful tragedy in this state, it should be kept in mind that the plan of destroying the forests which constitute the natural reservoirs for the water of the mountain regions of California and Colorado, and of constructing enormous artificial reservoirs for the storage of this water for irrigating purposes, is being pushed forward with much energy. If it is carried out, catastrophes resembling the one at Johnstown will be inevitable. The advocates of the plan admit that calamities resulting from the breaking of reservoirs and dams will occur, and compare the liability to such disasters to the liability to accident which now attends the running of rail-road trains. There is no reason to suppose that engineering ability will ever enable us to dispense with the natural function of mountain forests in storing water and regulating its flow.

Harrisburg, Pa. *J. B. Harrison,*
Cor. Sec. American Forestry Congress.

Recent Publications.

The Industries of Japan; Together with an Account of its Agriculture, Forestry, Arts and Commerce. By J. J. Rein, Professor of Geography in the University of Bonn. Illustrated. New York: A. C. Armstrong & Co., 1889. (Translated from the German.)

Five years ago Professor Rein published a large volume which, in its English translation, bore the title, "Japan, Travels and Researches," and was universally accepted as the most thorough and scientific treatise of its class. In the present book he extends and completes the account of his researches which, it may be explained, were prosecuted at the cost of the Prussian Government. He is conscious, he modestly says in the preface, that all he can offer is "only patchwork," notwithstanding many years of care and labor, that all subjects are not treated with equal fulness, and that the pictorial arts of Japan, in especial, are but meagerly treated. Nevertheless, the book is a marvel of painstaking thoroughness in almost all its parts, and is more systematically arranged and clearly written than is customary in a work from a German hand. Here and there one finds an ambiguous or awkward expression, but it seems due not to the author himself but to a hasty translator or careless proof-reader.

About half of the large octavo volume is devoted to agriculture and forestry and the industries dependent upon them, the other half being absorbed by artistic industries, trade and commerce. The general condition of Japanese agriculture is passed in review, its food-plants are separately considered and then what are called its "plants of commerce;" cattle-raising and silk-growing are described; the forests of the country are passed in review, and the nature and uses of the various kinds of Japanese woods explained; and then follows a chapter on gardening and another on the acclimatization and extension of Japanese ornamental and useful plants in Europe. There is scarcely a page in any of these chapters from which we might not quote with profit to our readers; but, of course, their chief value lies in that systematic completeness to which no citation of special parts can do justice. Unlike most writers who speak of industrial and commercial facts, Professor Rein has a scientific knowledge of botany, and everything he reports is thus of great interest to the student of plants as well as to the student of economic conditions. In speaking of any plant of commercial value he is careful to note its place in the botanical systems, its relation to allied plants in other lands and its aspect to the eye; and then he follows it through the industries in which it is of service, explaining processes of manufacture and final results with equal care. Seven closely-printed pages are given, for example, to the Camphor-tree (*Cinnamomum camphora*), and from them we learn the geographical distribution of the tree, its nature and habits as seen at home and as affected by the climate of different European regions where it has been introduced, the size and aspect of conspicuous individuals in Japan, the processes by which gum-campor is produced (with a picture of the apparatus used), the uses to which it is put by the Japanese, and the commercial results of the industry. The Tea-plant and the industries dependent upon it are treated in a most thorough and illuminative way; and fruits, vegetables and condiments, leguminous plants, dye-plants, oil-producing plants, drugs, and many other groups are as carefully described.

In the forestry chapters Professor Rein refers back to his earlier volume with regard to certain general facts. Yet those he gives are sufficient to explain with great clearness the nature and aspect of Japanese forests, facts of geographical distribution, and the difference between the wild and the cultivated woodlands of the country. The chief building-woods, he says, are furnished by *Cryptomeria Japonica, Abies firma, Pinus densiflora* and *Pinus Thunbergii*. It is highly probable, he thinks, that all the forests which furnish these woods, "and also those of Chamæcyparis and Thuyopsis have been planted since experience has shown that their self-propagation, like that of most conifers, is difficult, and wherever a Pine-forest disappears its place is usually filled by Blackberry-bushes, Wild Roses and other almost worthless deciduous plants." These trees, other useful sorts, like *Castanea vulgaris*, several deciduous Oaks, the evergreen *Quercus cuspidata* and some others less widely known, for example, the so-called "Screen-Fir," (*Sciadopitys verticillata*) "are raised from the seed in nurseries, as with us, and the seedlings transplanted after two years' growth. The cultivation of the plants during these two years, as well as the laying out of the plantation, is very carefully managed and based on all the teachings of past experience. There is also no lack of printed instructions with all necessary illustrations. The ground chosen for such a plantation is prepared as thoroughly as for a fruit-tree nursery or a tea-garden, and is well enclosed with a light, Bamboo-hedge from three to six feet high, which does not cut off light and air. In snowy districts a further protection is provided in winter in the shape of a straw roof, . . . and in case it becomes necessary to shelter the young plants from the cold, . . . straw fastened to a Bamboo-framework is spread over them. The greatest care is also observed in taking up the young seedlings, cutting back their perpendicular roots, making ready the plant-holes with the hoe, and planting again in the ground laid out for the new forest. I did not find, however, that our system of planting in rows was very much adhered to; much more regard was had to the nature of the ground, and to the peculiar taste which has a dislike for systematic regularity on a wide scale except where it is necessary, as in agriculture. The cultivated forests of Japan are seldom very large. Poor, gravelly soil, fixed dunes and other sandy districts are, as a rule, devoted to the above-mentioned Pine-trees. . . . The other species of cultivated conifers need a deeper and better soil, which is to be found only in the plains. They are sometimes found, however (as the Chamæcyparis and Thuyopsis), on the lower gentle slopes of mountains. In case the soil here is too stony and unfruitful, the Chestnut is planted, while the Oak is better adapted to the saddles and hollows. It is seldom, however, that forest cultivation of any kind goes higher than 3,000 feet." Many interesting facts are given with regard to the cultivation of different kinds of trees in different districts, and the economical or religious reasons which cause a demand for special kinds of wood. "The Bamboo-groves may also be ranked as cultivated forests. They serve the most manifold purposes, making an agreeable diversion in the landscape, and are especially frequent on the boundaries of the larger cities, where great use is made of the cane. . . . As is more carefully noted in Volume I., the deciduous forest of Japan, in contrast to the dark Pine-forests and to our own woods with their few species, is made up of a great mixture of large numbers of trees and bushes in all stages of growth. It is exceptional, and generally due to special cultivation, when we find Chestnuts and the varieties of Oak forming separate plantations. Creepers and climbing plants, parasitic and rooted Ferns are seen in greater variety and of larger growth than with us. . . . The most common constituents of these forests are Oaks, Beeches, Hornbeams, Maples, Birches, Horse-chestnuts, Magnolias, Aralias, Walnuts, Elms, Planes, various *Rosaceæ* and, in moister places, Ashes and Alders." The Japanese deciduous forest, Professor Rein explains, is, however, "not at all a primeval forest. It may here and there even be a plantation on what was once a field, but it has the stamp of a thoroughly natural growth, and is left to itself and renews itself. The woodman visits it with his axe, it is true, but only for the sake of the most valuable and scattered timber, such as *Magnolia hypoleuca, Stuartia monadelpha, Actinidia volubilis* and some others, and this does not in any way affect the settled character of the forest. This is accomplished by means of thorough destruction by forest fires." When these occur the place of the trees is taken by a "brushwood in which the Fire Weed (*Epilobium angustifolium*) springs up here and there, as in our burnt forest-grounds, and stiff Bamboo-grass (*Phyllostachys bambusoides*), and in high, damp places also the *Polygonum cuspidatum* more than eight feet high. The forest generally takes on its original character by degrees and after a long time." Of course these brief citations give but a glimpse at the interest which the forestry chapters of Professor Rein offer to the general reader. The multitudinous facts of scientific import must be sought by the student in his own pages.

In the chapters devoted to gardening we find brief descrip-

tions of the different sorts of Japanese pleasure-grounds and lists of the plants most commonly used to adorn them. No page is without its interest and significance, but Professor Rein speaks with less enthusiasm than most travelers of the effects beloved by Japanese gardeners. He does not seem to accept their point of view and recognize that it is thoroughly artistic although quite unlike the European point of view. He sees little but a painful artificiality in Japanese attempts to make pictures of wide landscapes on a miniature scale—he sees only the process and not the illusive effect upon which a Japanese eye would dwell. With regard to the methods employed for dwarfing plants and the extraordinary results achieved he gives some interesting facts. "To produce a slow growth they choose particularly small seeds from a poorly developed individual plant. Frequent cutting back has been found even more effective, also planting in pots of insufficient size. Twisting the twigs and stems in a horizontal spiral direction has the same effect, and the refrigeration of the ground and roots by evaporation, using porous pots. Grafting is often also a means to this end, *i. e.*, it serves to check natural development. It is employed especially in the many varieties of *Acer polymorphum*, and is usually effected according to the oldest methods known to gardening—grafting by approach, as it is called. Some of the results obtained in Chinese and Japanese gardening in dwarfing species are very surprising. Kæmpfer relates that he once saw growing together in a small box, four inches long, one and one-half inches broad and six inches high, a Bamboo-cane, a Pine-tree and a blooming Plum-tree. The price of this group of dwarfs was nearly £100—an evidence of the difficulty and tediousness of the accomplishment, and also a token of the high estimation of such abnormal forms. Whoever visits a Japanese art and trade-garden in spring will notice in company with these dwarf forms yet another kind of popular plant-maiming which is usually practiced on the Mume Plum. Young and blooming shoots from stumps, four to twelve inches in height, are wound about these or bent over them umbrella-fashion. Often the trunk is cut down even to the ground so that the small blooming offshoot looks like an independent tree." The great number of plants with variegated leaves, produced in Japan, is likewise noted by the author, with wise advice as to the danger run by European gardeners in introducing them profusely into their plantations. He speaks also of the fact that the Japanese do not like to separate flowers from their stems and gather them in bunches, admiring far more their individual beauty under natural conditions—"lovely blossoms and leaves on their stem or slender twigs, the Iris and the Lotus-flowers on its long stem." But he adds that "one would scarcely suppose that under such circumstances there could be such a thing as 'the art of arranging flowers' in set pieces;" thinks that the art which goes by this name depends too much upon the forms of vases and other receptacles, and seems to deplore the fact that "the arrangement and coloring of bouquets is not understood by the Japanese." This very fact is usually cited with admiration by visitors to Japan, and once again Professor Rein shows a lack of sympathetic artistic instinct. But this lack should not, of course, be weighed in the balance against the numerous gifts and merits which his volume, as a whole, reveals, and we can heartily recommend it to all who desire a knowledge either of the natural products of Japan or of the industries dependent upon them. Its greatest value springs from the fact that these two subjects, so often disassociated in print, are considered together, and, are systematically, clearly and fully set forth in their mutual relationships.

Periodical Literature.

It is pleasant to find that our architectural journals are turning their attention to the allied art of landscape-gardening. The connection between the two arts is so close as to be of vital importance to the welfare of both; and we hope that many architects will inwardly digest the excellent articles on "Landscape-gardening and its Relations to Rural Architecture," by the late J. A. McKenzie, and recently published in *Building*. The first chapter is devoted to the general principles which underlie the subject. To quote from it at length would merely be to repeat what has already often been said in these columns; yet it can hardly be too often repeated that while we have comparatively few good landscape-gardeners in this country, we have some of the very best; that an intelligent demand for more will surely create a supply; that no body of men can "promote this demand with greater influence than architects," and that "they are really interested in its promotion as much, if not more, than any others." The writer does not over-state the case when he says that to start to lay out a place without some comprehensive preliminary scheme is as great a piece of folly as it would be to essay to "erect a mansion piecemeal, room by room or wing by wing, ignoring the general appearance of the whole structure when completed; each individual section as it is constructed may be perfect, but the *tout ensemble*, unless by some happy and remote accident, will, to a certainty, be a failure, lacking coherence and harmony." A significant paragraph is likewise the following: "One reason for the hesitation of owners to seek the assistance of experts when about to lay out their properties may be traced to the damage done by the innumerable so-called landscape-gardeners, who generally combine with their professional (?) work the more appropriate and modest calling of 'jobbing gardener.' If these are the specimens from whom any one deducts his opinion of landscape-gardening, no wonder he is disgusted and prefers to do the work himself or allow his gardener to do as he pleases. For these men never think it worth while to prepare a design, and the result is that where they do not entirely obliterate what natural beauty the place possessed before their ruthless spades started to work, they wholly fail to grasp the opportunities for enhancing those beauties and natural effects which have really stared them in the face. And their work usually runs into enormous expenditure in proportion to what is done; for, owing to their gross ignorance, useless work is often executed, and work done has as often to be torn down and executed afresh." Truly, it is not such men as these whom we have had in mind in claiming, so often, a wider and franker recognition of the claims of the landscape-gardener to be the architect's helper on equal terms. It is the thoroughly trained and experienced artist who should be chosen; and any proprietor who really desires to find him can do so without a great deal of trouble. As the lamented writer says, the fact that make-believe artists have any standing in the community is simply because their employers are not "as appreciative of the difficulties of landscape-gardening as they are of those of architecture." His second chapter is devoted to a systematic consideration of the various tasks which the landscape-gardener must execute, such as choosing the location of buildings, grading, forming carriage approaches, roads and walks, managing lakes and water scenery, planting, and treating small properties and suburban lots; and with regard to all points wise advice of a general sort is given. "As to the future of landscape-gardening in this country," the author remarks towards the end of his valuable sermon, "there can be no doubt; there are already substantial signs that a taste for it has taken hold of a considerable class of country residents. What is wanted is to extend that taste and develop it and interest all property-owners in its cultivation." And we may conclude with another brief quotation, which concisely expresses the gist of the whole matter: "The question is often asked, What is really the proper work of the landscape-gardener? The answer is, Everything that is done to a property which will in any way alter its appearance comes naturally and properly within his scope."

Correspondence.

Unappreciated Trees.

To the Editor of Garden and Forest:

Sir.—He who plants a tree, of any kind, is almost always so certainly a public benefactor, that it appears ungracious to find any fault with him; nevertheless, I feel like quarreling with park-superintendents and landscape-designers, as well as with the less pretentious planters, for their indifference towards certain of our most beautiful indigenous trees.

The Beech, *Fagus sylvatica*, unites the sturdiness of the Oak, the shapeliness of the Maple and the dignity of the Elm. It is the cleanest limbed of all trees, its smooth ashen-colored bark being almost unbroken from base to summit. No tree has a denser or a richer foliage than the Beech, and its buds are nearly as beautiful as its perfect leaf; long, tapering and pointed, with a ruddy tinge, perceptible even in midwinter. Standing a little distance off and in the right light, the body of the tree upon a winter's day appears suffused with a faint blush, which, upon the approach of spring, becomes a full coral tint, such as fringes the afterglow of a November sunset. The Beech is a tree of remarkable symmetry, preserving the same proportion in trunk, limb and leaf. It is persistent to one type, always and everywhere a thoroughbred.

The Yellow Birch, *Betula lutea*, has the fineness of limb and of foliage which distinguishes all the Birches, but its chief attraction is the thin, film-like pellicle or scurf-skin forming the outermost part of its bark. This fine covering peels partially off from the trunk and larger branches, remaining

attached thereto in dainty waves and ringlets, flaxen-colored, with a kind of satin finish. Those parts of the surface from which the pellicle does not loosen often take on a metallic lustre, of a shade between that of nickel and of brass. This apparel of the Yellow Birch varies with different specimens, appearing to be most perfect upon those well exposed to the sun during the period of their early prime.

Both these superb trees are unique, and beyond comparison with all other trees in the beauty of their bark. They are as attractive without their foliage as with it, since its loss makes their special feature more prominent. If it were in my power I should, instead of building for my fellow citizens a cathedral or a university, buy and lay out for them a park which should be set wholly with the Beech and the Yellow Birch. Whoever shall bring those two ornaments of our woods into the same favor for shade-trees as the Elm and Maple, will do more toward nourishing among us the spirit of beauty than if he were to import and donate to his countrymen the gallery of the Louvre.

Thus much for my deciduous favorites. But no less do I complain of the scant regard paid to the most graceful of evergreens—our native Hemlock, *Tsuga Canadensis*. This noble conifer has not the majestic port and solemn beauty of the White Pine, but it surpasses that monarch in general comeliness, and has in its order no other peer. The delicacy and richness of its foliage, bright green upon the upper and glaucous upon the under surface, is excelled only by the Club Mosses. The Hemlock is lithe and elastic, and its limbs are wind-proof, and it is the least disposed to rust or to the attack of insect pests of any of the conifers. Besides these qualities, the Hemlock has a special facility of adaptation. It can be a stately tree, a wide-spreading shrub, or a most effective hedge-plant, as you choose to make it. Yet, in place of this matchless evergreen, we have imported the coarse Norway Spruce, and the still coarser Scotch and Austrian Pines, as our grandfathers imported the miserable and short-lived Lombardy Poplar, than which they could have found nothing more unsightly among our entire native flora.

Poughkeepsie, N. Y. *Alfred H. Peters.*

Insensibility to Certain Odors.

To the Editor of GARDEN AND FOREST:

Sir.—It is well-known that certain persons are color-blind, that others are "note-deaf," or unable to appreciate the difference between musical and unmusical sounds, and that some are entirely deficient in the senses of taste and smell. But I think it is not so generally realized that many persons whose sense of smell on the whole seems as keen as that of the average man, are powerless to perceive certain special perfumes. Delicate odors, like that of the Pansy, are naturally those with regard to which this deficiency is most often found. But some years ago I discovered that a friend, sitting near an avenue of European Lindens, the perfume of which was almost overpowering, could not perceive it at all, though as regarded other scents his sense was normal. Afterwards I found the same insensibility to the perfume of Linden-blossoms in other individuals. My sister declares that she can perceive in the great flowers of the green-house Datura no odor whatever except a certain earth-like smell proper to growing things in general, and I myself cannot realize that *Olea fragrans* deserves its name even to the faintest degree. Yet we are both susceptible to even the faintest perfumes of other flowers. I have no trouble with Orange-blossoms, so similar in scent, I am told, to those of *Olea fragrans*, and as to the Datura, the odor is so strong to me that I know a blossom is in the house the moment I enter the front-door, and can hardly sit in the room with one. This total deficiency of sensibility in certain directions is a different thing from that dislike to certain odors, agreeable to most people, which is more often recognized. I should like to know whether any of your readers can cite other instances, and whether there is any scientific explanation of facts which seem so odd.

New York City. *T. B. F.*

Temperature and Germination.

To the Editor of GARDEN AND FOREST:

Sir.—Referring to Mr. Allen's observations on the slow germination of corn in cool temperature, allow me to recall some very careful trials to determine the lowest germinative temperature for Indian Corn, the results of which have been published in full in the Report of the New York Agricultural Experiment Station for 1884 and 1885, and a partial summary in the "Proceedings of the American Association for the Advancement of Science," Vol. XXXIV. As the figures are interesting, I may again put them on record in GARDEN AND FOREST.

When the apparatus was maintained within the extremes of 37° and 42° F., a sample of Dent Corn germinated in 430 hours, and one of Flint Corn in 460 hours.

Within the variation of 41°–43.7° F., samples of various varieties of Dent Corn germinated in 233, 233, 401, 401, 479 and 521 hours respectively; of Flint Corn, 331, 331, 498 and 498 hours respectively; of Pop-corn, 378, 378 and 498 hours respectively; of Sweet Corn, 452, 498, 479, 498, 616, 616 and 521 hours respectively.

South Framingham, Mass. *E. Lewis Sturtevant.*

Another New Palm.

To the Editor of GARDEN AND FOREST:

Sir.—While visiting a few of the south keys of this state, Mr. R. D. Hoyt, of Bay View, noticed large specimens of what appeared, at first sight, to be *Thrinax argentea*, but on closer inspection were found to be totally unlike this common Palm. Leaves and seeds were sent to botanists of this state for identification, but in their lack of suitable botanical works could not determine it. We recently found the description of *Thrinax excelsa*, Grisebach, to correctly apply to these specimens, many of which, eighteen feet in height, grace the tropical jungles of a few of the keys east of Key West. Thus another beautiful addition is made to the Palms of the United States.

Manatee, Fla., June 24th. *E. N. Reasoner.*

Recent Plant Portraits.

SKIMMIA FOREMANI, *Gardeners' Chronicle*, May 4th; a form, according to the raiser for whom it is named, derived from *S. oblata* of gardens, fertilized with the pollen of *S. fragrans*, and thus not a hybrid, but merely a form of *S. Japonica*; but in Dr. Masters' opinion this statement of the origin of this plant is open to some doubt; and it is possible that *S. Fortunei* had some part in its parentage.

ANOIGANTHUS BREVIFLORUS, *Gardeners' Chronicle*, May 4th; a Cape bulb formerly referred to Cystanthus, but now considered by Mr. Baker the type of a distinct genus. The flowers are yellow, with a short tube and spreading perianth-segments. It is recommended as a cool green-house spring-flowering plant.

CHRYSANTHEMUM MAXIMUM, *Gardeners' Chronicle*, May 11th; a hardy perennial plant, native of the Pyrenees and of Switzerland, which, if "cultivated properly," says the Rev. C. Wolly Dod, by whom this plant has been distributed, "that is, by being pulled to pieces and re-planted within a fortnight of Michaelmas every year in rich soil—it is quite a 'sensational plant.' The flowers sometimes measure four inches across."

CHRYSANTHEMUM LACUSTRE, *Gardeners' Chronicle*, May 11th; a native of Portugal.

Botanical Magazine, June.

SOBRALIA LEUCOXANTHA, *t.* 7,058; one of the largest-flowered of this beautiful genus, closely related to *S. macrantha*, from which it differs by the smaller limb of the lip and the pure white color of all parts of the flower, except the disk of the lip, which is orange. It is a native of Costa Rica, whence it was introduced into cultivation by the Messrs. Sanders, of St. Albans.

ENKIANTHUS CAMPANULATUS, *t.* 7,059; a native of northern Japan, and described as a small deciduous-leaved tree, with small, dull-red, pendulous, ball-shaped flowers. The genus Enkianthus, of which six or seven species, distributed from the eastern Himalaya to northern Japan, are known, is very closely related to Andromeda, the only technical difference being found in the seed-coats. *E. campanulatus* has been introduced into England, where it is perfectly hardy, by the Messrs. Veitch. It may be expected to flourish in all our northern States.

SPATHOGLOTTIS IXIOIDES, *t.* 7,060; a graceful terrestrial Orchid, a native of Nepal and Sikkim, of gregarious habit and with large, nodding, bright golden-colored flowers. It is easily cultivated in pans of sphagnum and peat, and blooms at midsummer.

ANGRÆCUM GERMINYANUM, *t.* 7,061; this very handsome species was discovered in 1886 by Lion Humblot, a collector of the Messrs. Sanders, in the interior of Madagascar. The plant from which this figure was made flowered at Kew in the spring of 1887, and again last spring, and is apparently the only specimen of the importation of twenty plants which survived. The stems of this beautiful and very interesting species are twelve to eighteen inches long, with alternate distichous, spreading, very thick and bright green leaves one and a half to two inches long, sessile, sub-cordate or half-clasping at the base.

The flowers are pure white and solitary, on short, slender axillary peduncles. The sepals and petals are two to three inches long, narrow and pendulous, and the lip is broad, quadrate, with rounded angles, and an inch across, the anterior margin suddenly contracted in the middle into a subulate filiform, recurved tail an inch long. This is one of the handsomest of recent Orchid introductions.

SOLANUM PENSILE, *t.* 7,062, a native of Guiana and of Brazil, and, although long known to botanists, a recent introduction into gardens, having been sent to Europe first in 1887. It is a tall, slender, unarmed, climbing plant with purple flowers very much like those of *S. Dulcamara*, except that they are produced in loose, spreading, terminal panicles. It requires the temperature of the tropical stove-house.

Notes.

The *California Florist and Gardener* has been merged into the *Pacific Rural Press*.

Mr. John Taylor, the well-known Rose-grower of Bayside, Long Island, cut 60,000 buds of the Madame Cusin Rose from 200 running feet of glass between July 1st, 1888, and February 1st, 1889.

A competent observer writes of the land which has been acquired by the City of Wilmington, Delaware, for a park, that it is "a most refreshing place." It is in the main a piece of rocky woodland, through which the Brandywine flows.

Eighteen thousand Japanese Orange-trees have been planted in one orchard in the southern part of Monterey County, California, and native gardeners have been imported to care for them. They are now in their second year, and the experiment promises to be successful.

The Pennsylvania Horticultural Society has accepted the offer of Messrs. Strauss & Co., of Washington, D. C., to bestow a prize of $300 for the best twelve cut blooms of the new Souvenir de Wooton Rose, and will award the prize at a meeting of the Society in January or February next.

Over 3,000 different species of plants have been grown in the rock-garden of the Royal Botanical Gardens in Edinburgh. A list of 1,408 was published by the curator of the Gardens in the transactions of the Botanical Society for 1887–'88, as having flowered during 1887 and being not mere botanical curiosities but well selected species of plants suitable for rock-gardens and such as intending planters would do well to inspect.

It has been stated in this journal that the pamphlet entitled "Observations on the Treatment of Public Plantations" was prepared by Messrs. Olmsted and Harrison at the suggestion of a land-improvement association, the Park Commissioners of this city and the Torrey Botanical Club. We have received, however, authentic information that the Torrey Botanical Club offered no suggestion, and took no action whatever in relation to the questions discussed in the report.

Mr. T. S. Brandegee has recently returned to San Francisco from a long botanical journey in Lower California, devoted principally to the neighborhood of Magdalena and Marguerita Island and Comonder, where he collected about 400 species. Later collections in the centre of the peninsular, and near San Quintin, bring the number up to 800 or 1,000 species. Mr. Brandegee on his arrival at San Diego was married to Mrs. Curran, the accomplished botanical curator of the California Academy of Sciences.

Dr. F. S. Gould, of Montecito, near Santa Barbara, California, has recently received from Italy 600 young Olive-trees of the best Italian varieties for the production of oil. They are the Cucco, Correggiolo, Frantoio, Morinello, Morchiajo and Palazzuolo. The plants are budded on seedling stock, and are two to four years old from the bud. The plants arrived in California after the three-months' journey in excellent condition, having been carefully packed, the roots of each plant separately, in a straw jacket.

Arrangements have been made under which persons who desire to attend the Convention of the Society of American Florists, in Buffalo, next month, can procure return tickets for one fare and a third. Delegates will pay full fare to Buffalo, and receive a certificate to this effect from the station-agent where the ticket is purchased, and this certificate, when signed by the Secretary of the Society, will be good for a ticket at one-third of a full fare. All the railroads east of the Missouri have practically entered into this agreement. Tickets will be good for three days before the Convention and the return tickets for three days after its close.

There is an Ash-tree standing in the little village of Cuantilan, north of the City of Mexico, which is believed to have been planted there not long after the conquest. The trunk measures at the ground thirty-three and a half feet in circumference, and the shade cast by its branches at mid-day, when the sun is just over it, covers a circumference of 335 feet. This great tree, and the other large Ash-trees, which are a conspicuous feature of the vegetation of the Valley of Mexico, are probably all *Fraxinus pistaciæfolia*.

At the Arnold Arboretum, a new insect, a species of *Coccid*, has become quite noticeable and abundant on the trunks and branches of certain Elms during the past two or three years. It is doing considerable injury to young trees, and seems to be a very difficult insect to exterminate. A full record of its habits and origin has not been published yet, but it is supposed to be an importation from Europe and to be known to European entomologists. A further account of the insect and its injuries will be given in a future number of GARDEN AND FOREST.

The English Government is helping in the work of establishing a system of botanical stations throughout the smaller West Indian Islands. The first station established was at Grenada, and it has grown into an attractive, as well as useful, botanic garden. The station at Dodds, in the island of Barbadoes, has distinguished itself by first succeeding in raising Sugar-canes from seed, and has done other valuable work with regard to the sugar industry. At Santa Lucia is another station which distributes useful plants among the islanders. Other posts are to be established by order of the Secretary of State for the Colonies at St. Kitts, Nevis, Dominica and Antigua, and they will receive assistance from the Botanical Department at Jamaica. One great point in the extension of these stations is that through the Jamaica establishment the resources of Kew can be made available in the remoter parts of the Archipelago.

In an address on "The Dahlia," recently delivered before a horticultural club, and reported in the *Garden*, Mr. T. W. Girdlestone says the plant was originally found growing in sandy meadows in Mexico, 5,000 feet above the sea, by Hernandez, a physician to Philip II., of Spain. It made its first appearance in Europe at Madrid, where *Dahlia variabilis* was flowered from seed in 1789, the grower naming the plant after Andreas Dahl, a Swedish pupil of Linnæus. Lord Bute was then Ambassador at Madrid, and in the same year—just a century ago—Lady Bute sent seeds to the Royal Gardens at Kew, and thus first introduced the plant into England. Lady Holland also sent home seed from Spain in 1804, and among the plants raised at Holland House were the first two seedling double varieties seen in Europe. It was long supposed that these were literally the first double Dahlias, but it appears that figures of both single and double flowers had been published in an old work on the natural history of Mexico, printed in Rome in 1651. One of the double varieties with a yellow disk and violet ray-flowers there bore the name Cocoxochitl. Perhaps we, too, have the same flower, but fortunately under another name. About the year 1800 serious attempts were made in France to introduce the tubers of the Dahlia as an article of food, but the public seemed to prefer to consider it a purely ornamental plant.

The largest tree in Great Britain, and one of the most famous, is the Cowthorpe Oak, in Yorkshire, which is believed to be some 1,500 years old. When Evelyn wrote his "Sylva," in the seventeenth century, its circumference at the ground was seventy-eight feet, but later, earth was banked up around it, which covered some considerable projections and reduced its girth. At the beginning of the last century its branches overshadowed an area of half an acre of ground. The top or leading branch fell at some unrecorded date, curiously slipping down into the hollow trunk where it remained. In the last century one of the main branches which was blown down proved to be ninety feet in length, and yielded five tons of timber. When carefully measured by Dr. Jessop in 1829 the girth of the tree at the ground was sixty feet, and at a yard above forty-five feet; the chief remaining limb was fifty feet long and its circumference eight feet, and the height of the tree was forty-five feet. It was then hollow to the top. For many years saplings raised from this tree were sold in pots by the villagers for as much as a guinea apiece. It is now a venerable ruin, but most picturesque in its decay. It stands in a green paddock, carefully protected from injury, with its ancient limbs supported by props. An idea of its size may be gathered from the statement that at least forty persons can stand within its cavity, and that its circumference is greater than that of the Eddystone Lighthouse, which was confessedly designed on the model of an Oak.